MEDC – 201 System Programming

Unit 1
Fundamental of programming, steps in problem solving with digital computer algorithm, flow chart and textual representation, primitive actions, control construct like conditional, iteration, conditional repetition, recursion, programming with Pascal of C

UNIT2
Data & Data types, data representation, data structure array-various operations with array, concept of pointers and pointers manipulations, pointers for data structures and functions, static and dynamic allocations, implementations with arrays and pointers, various operations like searching, appending, insertion & deletion in lists, doubly linked list and their implementations, stack,PUSH/POP & TOP of stack operation, applications of stacks, queues & various operations on queues, tree, binary and K-ary trees, tree traversal, insertion and deletion in tree, B-tree and AVL tree, operations on those tree applications

Unit 3
Searching and sorting, linear, binary and Hash search, minimum and maximum selection, divide and conquer, sorting, insertion sort, bubble sort, quick sort & heap sort, matrix operations, dynamic programming

Unit 4
Overview of system programs, Assembler, interpreter, compiler, Editor and operating system.

Reference books: -
1.Data structure & Program design by Kruze, PHI
2.Algorithms,Data structure & programs by Wirth N., PHI
3.The programming language by Kernighan & Ritchi, PHI
4.Introductory problem solving by pascal by Schieder,John Wiley

MEDC – 202 Modelling and Simulation of Computer

Unit 1
Induction to Discrete event system simulation, its applications, advantages and advantages, system and system, environments and component of system, Discreate and Homogeneous system, modeling of system and type of models, Various steps in simulation, General concept in discrete event simulation.

Unit 2
Practical models in simulation: review of terminology and concepts, useful statistical models, discrete distributions, continuous distributions, Possion process and empirical distribution.

Unit 3
Queuing model: Characteristics of queuing system transient and steady state behavior of queue, measures of performance using queuing systems property.

Unit 4
Random number and its generation: Properties of random numbers, distribution of pseudo random no, test for random no., Random variant Distribution, inverse transform technique, Direct transformation for normal distribution, Acceptance and rejection technique.
Modeling: Data Collection, identifying the distribution with data, parameter variation, goodness of fit tests, selection of input model without data, multivariate and input models.

Unit 5
Introduction and validation of simulation models: output analysis for single model, nature of output data, types of simulation with respect to output analysis, types of performance and their estimation, output analysis for terminating simulations, analysis for terminating simulation.

Reference Books:
1.Simulation Modeling and Analysis by
2.Modeling and simulation by Bank and Carson PHI
3.Network Modeling, simulation and analysis by Garcia and Garcia
4.Telecommunication Network: Protocols, Modeling and Analysis By M. Schwartz

MEDC – 203 Network Design Technology

Unit 1
Review of concepts of Layering and Layered models- OSI & TCP/IP
LAN Technology, transmission Medium, Topology, Medium Access Control (MAC) Techniques
including MAC& LLC sub layers,

Unit 2
LAN system, Ethernet system, Fast Ethernet& Gigabit Ethernet, Token Ring, FDDI
Internet working with TCP/IP, Internet Protocol (IP) Suite including IP V4, IP V6 Transport
Protocols, TCP and UDP

Unit 3
Introduction to IP routing, various interior gateways protocols like RIP, OSPF and exterior
gateway protocols like BGP

Unit 4
Introduction to label Switching and MPLS
WAN technology: WAN Vs LAN, Circuit switching mechanism and network design, packet
switched networking including routing and traffic control, X.25
ISDN and Broadband ISDN: Overview, ISDN, interface and functions, layers and ISDN services-
ISDN standards and services
High Speed network frame relay, frame relay protocols, services and congestion control,

Unit 5
ATM: ATM adaptation layer (AAL), ATM traffic and congestion control ATM LAN, ATM LAN
emulation and multi protocols over ATM (MPOA)

Reference Books.
1. Redia Pearlman, Interconnections, bridges, routers, switches and Int protocols Pearson Edu
2. Comer, Internetworking with TCP/IP Vol. I PHI
3. Tenenbaum, Computer Networks, PHI
4. Forouzan B, Data communication and networking, TMH.
5. Stalling W, Data and computer communications, PHI
6. Hardy, Inside networks, PHI
7. Glover and Grant, Digital Communication, PHI

MEDC – 204 Optical Network

Unit 1
Introduction to optical network: Telecommunication, first generation optical network, multiplexing technique, second generation optical network,virtual circuit services and data gram, transparencies of regenerator

Unit 2
Network components: couplers, Isolators, Circulators, Multiplexer , filter, fiber bragg gratings as ADD/Drop multiplexers, frabry perot filters, acoustics optical tunable filters, characterization of switches, mechanical, electro-optic, thermo-optic, and SOA switches, switching architecture.

Unit 3
First generation of optical network: SONET, SDH, goals of SONET design , Multiplexing in SONET,elements of SONET/SDH infrastructure, SONET physical layer,comuter interconnections,ESCON, fiber channel, FDDI,ATM,IP layered architecture , physical layer, data link layer, network layer, transport layer

Unit 4
Broad cast and select network: topologies for broadcast networks, bus topology, star topology, media access control(MAC) protocols, throughput calculation, synchronization, aloha and slotted ALOHA, test beds,LAMBDANET,rainbow,starnet

Unit 5
Wavelength routing network: optical layer, wavelength cross connect, wavelength reuse reliability, virtual topology and circuit switching and node design, degree of wavelength conversion, network design and operation traffic models, and performance criteria, static and reconfigurable network, classification of light paths

Unit 6
Photonic packet switching ,optical time domain multiplexing(OTDM),Method of multiplexing and demultiplexing, Broadcast ,OTDM network ,bit interleaving and packet interleaving, optical and gates non linear optical loop mirror, tera hertz optical asymmetric demultiplexer, switch based network, deflection routing

Referance Books:
1. Optical Networks: Apractical Prospective By R.Ramaswamy and K.N.Shivrajan
2. Optical Networks By C.S.R.Murthy and M.Guruswamy, PHI
3. Computer Networks By Tanenbaum

MEDC – 205 Mobile & Satellite Communication

Unit 1
Review of wireless and cellular radio communication: The cellular concept, system design fundamentals, frequency reuse, reused distance, cluster size, channel assignment strategies, handoff strategies, co-channel interference and system capacity, trunking and grade of service.

Unit 2 Speech coding for wireless system applications and broadcast systems, coding techniques for audio and voice and popular speech codes. Brief introduction to radio channel characterization, multi-path propagation, co channel interference, exponential power delay profile, propagation effects, scattering, ground reflection, fading, long normal shadowing, coherence bandwidth

Unit 3 Modulation techniques for mobile and satellite communication, their generation and detection, performance of spectral and power efficiency. Physical layer technique, diversity, spread, spectrum, frequency hopping, direct sequence, adaptive equalization, Orthogonal Frequency Division Multiplexing (OFDM)

Unit 4
MAC Protocols; 802.11 and its variants, ETSI-HILARAN type 1 MAC protocol, multiple access with collision avoidance.

Unit 5
Introduction to GEO, MEO and LEO satellite systems, Antena positioning in GEO and Link calculations, wideband CDMA concepts principles.

Reference Books.
1. Wilkies and Garg, Principles of GSM technology, PHI
2. Schiller J., Mobile Communications, Addison Wesley
3. Viterbi A, CDMA, Addison Wesley
4. Gokhle, Introduction to Telecommunications, Delmer Thomson